of the received signal. If the strength is greater than a predetermined threshold, the values are stored in a memory. The discovered pilot transmissions are compared with each other, and the base station received with the highest power is selected.

In searching for the pilot channel, squared or absolutized values of the output of the searcher correlator are used, and the effect of the data modulation is thereby eliminated. The search may thus be realized by utilizing known methods. In a preferred embodiment of the method according to the invention, the polarity of the correlator's output changes when inverted symbols are received. The transmitted data modulation can thereby be easily detected in the receiver, and this information can be used in frame synchronization.

The subscriber equipment can now transmit a call set-up message to the selected base station. The call set-up message is most often transmitted as a random access message on the random access channel (RACH) which is a channel shared by the terminal equipment of the base station. The base station detects the message and transmits acknowledgement to the terminal equipment, and the call set-up is continued in previously known ways.

In the case of soft handover, the subscriber equipment scans the frequency band looking for the pilot channels of the neighbouring base stations. The base station with which the terminal equipment communicates has transmitted to the terminal equipment the spreading codes used by the base stations of the neighbouring cells on the pilot channels. The scanning is performed during the call set-up as described above. The terminal equipment measures the signal strength of the pilot channels it has found, and, if the strength of one or several pilots exceeds a given threshold, the terminal equipment sends this information to the base station, which possibly starts a soft handover process. The terminal equipment can also activate soft handover.

The method according to the invention is especially advantageous in a case of soft handover, since when the terminal equipment has found the pilot signal of the neighbouring channel, code-synchronized itself with it, and measured its strength, the equipment can be immediately frame-synchronized with it without having to look for the separate control channels transmitted by the base station for the synchronization. This reduces the operations required in the terminal equipment during soft handover, which can thereby be performed more rapidly and reliably than previously.

FIG. **3** shows a block diagram illustrating the structure of a base station according to the invention. At the base station according to the invention, means **30** for transmitting a pilot channel provided with a predetermined spreading code comprise means **31** for generating a signal **32** containing data information, the signal being multiplied in a multiplier **12** with the spreading code **11** of the pilot channel. This broad-band signal containing data information is transferred to a carrier frequency by multiplying it in a multiplier **13** with a carrier wave obtained from an oscillator OSC **1**, and the obtained signal is provided through a filter **14** to an antenna **15**.

In a preferred embodiment of the invention, the base station comprises means **11**, **12** and **31** with which the data modulation is realized in such a way that one or several symbols at the beginning of each frame of the signal to be transmitted are inverted.

The base station to be realized, of course also comprises other components, such as filters and amplifier units, but for the sake of clarity they have been omitted from the accompanying description and figure as components not central to the basic idea of the invention.

FIG. **4** shows a block diagram illustrating the structure of a subscriber equipment of the CDMA cellular radio network according to the invention. In the direction of reception, the subscriber equipment comprises an antenna **40** receiving a signal which is provided through radio-frequency parts **41** to an A/D converter **42**. The converted signal is provided to matched filters **44***a* to **44***d*, each of which is synchronized with a signal component propagated along an individual path. Furthermore, the converted signal is provided to a searcher correlator **43**, the function of which is to search for signal components transmitted with the desired spreading code. From the matched filters, the signal is applied to means **45** which preferably combine the received signal components and detect the signal. From the combiner, the signal is provided to a channel decoder **46**, and from there via a speech decoder **47** to a loudspeaker **48**. The terminal equipment according to the invention further comprises means **43**, **45** for synchronizing the subscriber equipment with the transmission of the base station by means of the signal contained in the pilot channel. In the terminal equipment according to the invention, the means **43** correlate with the pilot signal transmitted from the base station, and by utilizing the means **45** the terminal equipment is frame-synchronized with the transmission of the base station by means of the pilot signal.

In the direction of transmission, the subscriber terminal comprises a microphone **49** providing a signal which is applied via a speech coder **50** and a channel coder **51** for the spreading coding **52**. The terminal equipment also comprises radio-frequency means **41** through which the signal to be transmitted is provided to an antenna. The terminal equipment further comprises means **53**, which control the operation of the aforementioned components.

The subscriber terminal, of course, comprises also other components, such as filters, but for the sake of clarity they have been left out of the accompanying description and figure as components not central to the basic idea of the invention.

Even though the invention is described above with reference to the example according to the accompanying drawings, it is clear that the invention is not restricted thereto, but it can be modified in many ways within the inventive idea defined in the appended claims.

We claim:

1. A method for synchronizing each of a plurality of units of subscriber equipment with transmission of particular ones of a plurality of base stations, in a digital cellular radio network utilizing CDMA, and having, in each cell of a plurality of cells of said network, at least one base station, each such base station having a respective coverage area and arranged to communicate with subscriber equipment within the respective said coverage area, each said base station being arranged for transmitting traffic for reception by subscriber equipment located within its respective said coverage area using a given frequency band and, for each subscriber equipment, a respective first spreading code which is unique to each respective subscriber equipment,

(a) each said base station transmitting a respective data-modulated pilot signal for reception by all subscriber equipment located within its respective said coverage area, using said given frequency band and a respective second spreading code which is different from each said first spreading code; and

(b) each subscriber equipment automatically exploiting at least one said pilot signal for at least one of:

(i) determining which one of said base stations to become presently served by, as a presently serving base station, on the basis of relative signal strength and selecting that base station; and

(ii) achieving code and frame synchronization with the presently serving base station selected in step (b) (i);

step (a) including data-modulating each said pilot signal to provide a respective data-modulated pilot signal, by